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SCIENCE AND IMMORTALITY.

BY J. SANDERSON CHRISTISON, M.D.

We are accustomed to be told that the question of immortality can be satisfactorily settled only by the materialization of a properly accredited ghost. Absurd and impossible as this demand may seem, it now appears that the Society for Psychical Research, a vigorous, learned and modern body, containing many of our ablest psychologists and men eminent in other sciences, on both sides of the Atlantic, is almost ready to vouch for the possibility of such a demonstration. Indeed, in the opinion of some of its most distinguished members, such evidence has been found; while others, not so fully persuaded, freely admit that there are evidences pointing in that direction. And these conclusions follow after long and careful investigations which were entered upon in a spirit of scepticism. Such testimony is surely entitled to respectful consideration, since there is no moral or scientific authority for denying what we cannot disprove.

If, however, our belief in immortality were to depend exclusively upon such evidence coming to us direct—that is to say, by the reappearance of or communication with deceased persons—I fear not all of us would find the required opportunity to become persuaded. Such phenomena are regarded by many as being incredible on the ground that they are exceptional, and not in accordance with the usual order of Nature. But Nature is constantly presenting us with exceptional phenomena which we can neither deny nor explain. What shall we say of the astonishing events of trance, of somnambulism, of telepathy? That they occur is certain. And what shall we say of the organic exceptions to Nature's apparent rules—the so-called paradoxes—which are no less puzzling and are very numerous? There are "sports" among plants; there are five-legged quadrupeds; there are albinos among negroes; and among certain animals the isolated females habitually produce perfect offspring.

For the most part, such exceptions as I refer to are known to us only through the testimony of others. Yet who among us has reasons for denying them? And, if an exception in Nature is possible at all, it is possible anywhere and at any time, for it is an exception only because of our inability to explain it by other phenomena. It cannot be regarded as a break in the plan of creation, a plan which we shall later see is declared by science to be absolutely unfathomable. Yet, we are possessed with capacities for increasing our knowledge and understanding, which, in return, increase our capacity for believing what we do not understand. Is it not more than likely that the representative mind of the eighteenth century would have doubted any prophecy declaring that we would listen to the voices of each other a thousand miles apart, or that we would be able to see with our eyes through the hide of an ox? Yet, to-day these things are commonplace. The truth is, that those who have the widest knowledge are the most humble before well-attested exceptions; for, while we know what we expect, nothing is more certain than that we never know that what we expect will happen.

But in so far as Nature is known to us at all, her methods of working are found to be absolutely invariable, and her apparent irregularities seem the more regular the more they are understood. How otherwise could there be that harmony and balance in Nature which is the basis of all confidence and hope? We truly feel that we can trust Nature. But to what extent do we really understand her? Let us hear what science has to say. But, first, let us understand what science is, and then we shall know upon what she is entitled to speak and to what extent; for it is chiefly in the name of science that objections to a belief in immortality have of late years arisen.

Science is defined as classified knowledge. It is more correctly defined as the imperfect classification of imperfect knowledge. Indeed, some of its departments do not appear to be in a very robust or orderly condition. For example, Professor Starr Jordan has recently compared the science of Geology to "a book with half its leaves torn out, and the other half confused, displaced and blotted."* Such a condition would seem to be a good illustration of divine irregularities. But much the same comment can be sustained against other departments of science, while it is quite certain that no department has spoken its last word. Such being the case, it is evident that the deductions of science, commonly called "laws of Nature," are necessarily limited and fragmentary in their range. Furthermore, it is to be noted that they are merely human conceptions; for, as Huxley has said, "a law of Nature is the product of a mental operation upon the facts of Nature which come under our observation, and has no more existence outside of the mind than color has." Thus we see that science at best is simply the product of an orderly method of observation which may be applied to any subject whatever; and its laws are merely condensed statements of observed facts.

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* "Popular Science Monthly," October, 1902.

However, it must be evident to any one that a distinction must be made between science and scientists, for while the very nature of science is order and precision, scientists are prone to suffer from human infirmities.

It was the keen-minded Huxley who also declared that "science warns us that an opinion which outstrips evidence is not only a blunder but a crime." I think no one can dispute this, if it is only made clear as to what constitutes evidence. It is certain that were we to judge the soundness of science by the variety of theories at present held by scientists in the name of evolution, we would have to pronounce her a very uncertain authority on questions of fundamental importance.

But, as previously observed, science can only give a very limited range of testimony with any degree of certainty, for the reason that its departments are not only imperfect developments in themselves, but that they are specializations in knowledge, which have no authority to speak beyond their own phenomena until they are compared with one another. But, as Nature is a recognized unit, we would require a full knowledge of all the sciences, were they complete, before we could obtain the white light of a universal wisdom which is necessary to the comprehension of the fundamental problems involved in the mechanism of Nature. This requirement is strictly in accordance with the scientific dogma that science stops where evidence stops. Indeed, the solution by science of any fundamental problem of life whatever must necessarily await the conclusion of all possible investigation; whereas, the needs of humanity require that they come at the beginning as guides and illuminators to our very first steps. It would have been a strange condition of affairs if man had been required to wait upon science for that knowledge which is most essential to his welfare. But, even if science had analyzed the whole universe, it could reveal nothing more, as a contribution to our knowledge of personal relationship or duty, than what is knowable without such aid, inasmuch as a complete synthetic product resulting from a final analysis of all things tangible could result in nothing more and nothing less than Nature as she is, with all the phenomena as perceived through our outer and inner senses, unaided by any scientific devices. It is in this view that Nature is most readily seen to be the harmonious expression of both the means and the purpose of all law. The tendency of men of science is to ignore this aspect of Nature, as if the uncertain physiology of a part were the philosophy of the whole. Nevertheless, it is the general phenomena of Nature, into which we are born and among which we grow up, that are best understood and most informative, while the uncertainties with which we find ourselves surrounded constitute the very spice of life, the divine means for the development of faith, hope and charity, which some would seem to regard as the mere effluvia of organic decomposition.

It is surely clear to all that, owing to the imperfect state of science, it is in no position to dogmatize respecting the scheme of Nature, or even upon Nature's possibilities. Furthermore, it appears as a revelation of its own, that, in respect to the solution of any fundamental scheme of Nature, science is utterly helpless and hopeless, inasmuch as the greatest of all her discoveries is the fact that she is doomed to labor forever in the clouds of a universal paradox, wherein the farther she proceeds the more remote seems the end. Professor McKendrick, of Glasgow, has recently reminded us of this fact in regard to Physiology;* while Lord Kelvin has also quite recently told us that, as far as Physics and Chemistry go, these two sciences give no evidences whatever in support of the theory of evolution,† which is practically an announcement that the two most advanced sciences, those which deal with the final analysis of all things appreciable to our senses, absolutely deny the possibility of an automatic universe. It is even beginning to appear that the biological sciences are barren on the same question. Dr. Beard, the distinguished lecturer on comparative Embryology, in the University of Edinburgh, made the declaration* before the British Medical Association last summer that "the theory of natural selection (Darwinian theory) explains nothing at all beyond the state of science in certain years of the nineteenth century. . . . Unfortunately," he continued, "the belief in natural selection has become a superstition, and is now the personification of a mysterious deity." Other eminent biologists and philosophers can be quoted to the same effect. That such a theory as the Darwinian has attained so widespread acceptance, is but an illustration that no class of individuals are exempt from thought infection, wherever the mental soil has been rendered susceptible through the incoherence of an overloaded and restless ego. It is usually easier to follow suit than to follow the exactions of logic.

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* Presidential Address, Section of Physiology, British Association for the Advancement of Science, 1901; "Nature," September 26, 1901.

† Address reported in "The Times," London, May 4, 1903.

In this connection we must remember that the theory of evolution is not merely a claim respecting an order of events in Nature, but it is also a declaration of their mode of arrival as the grand scheme of the universe. In the light of the scientific axiom that only equals can comprehend equals, such an assumption must seem a monstrosity.

But, for the very reason that Chemistry and Physics do not support the theory of evolution, which attributes the origin of life to purely material things, we find that they give substantial support to a belief in personal immortality by their demonstration of certain principles which are a necessary part of all organic equations. They have demonstrated the principle that all matter is composed of individualities, and that these individualities are absolutely indestructible, although capable of assuming many relations. These individualities, or indivisible particles, may be displaced and recombined into many forms, but they can never be destroyed or deprived of their identity. As Stewart and Tait, the eminent physicists, observed some twenty years ago, "Experiments of the most varied kind consistently show us that we cannot produce or destroy even the smallest quantity of matter." Indeed, the very order and harmony of Nature are dependent upon the specific and unalterable character of its elementary constituents. They are the orderly means for an orderly service and end. In other words, the physical materials of Nature are composed of immortal entities, as far as human reason and experience can discover. Nothing in Nature is ever lost but *form,* and nothing *of* Nature can be conceived as changing Nature.

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* "British Medical Journal," October 15, 1904, p. 971.

But, farther than this, the science of Chemistry points through reason from the finite to the infinite—from a physical to a metaphysical realm beyond all things appreciable by our senses. Says Professor Ira Remsen, of Johns Hopkins, in a recent address:*

> "The chemist is brought face to face with facts which lead him to the belief that the smallest particles he can weigh by the aid of the most delicate balance, and the smallest particle he can see by the aid of the most powerful microscope, are immense as compared with those of which he has good reason to believe the various kinds of matter to be made up."

Thus the master chemist concurs with the master physicist, Lord Kelvin, when he says that "we have an unknown object placed before us in science."†

To assume, as some evolutionists seem inclined to do, that the various elements are but different groupings of the particles or atoms of the same substance, is simply to shift the problems of their origin and control to another base without in any way accounting for either.

In passing from the inorganic to the organic world, we must cross an immeasurable gap which all the industry of science has failed to bridge. Herbert Spencer long ago promised a volume that was to reveal the evolution of things living from things without life. But this promise he failed to keep.

But, respecting this gap between the unorganized and organized worlds, Lord Kelvin has stated the case of science in his recent address to the students of St. George's Hospital, London:‡

> "Let not youthful minds be dazzled by the imaginings of the daily newspapers that, because Berthelot and others have thus made foodstuffs, they can make living things, or that there is any prospect of a process being found in any laboratory for making a living thing, whether the minutest germ of bacteriology or anything smaller or greater. There is an absolute distinction between crystals and cells. Anything that crystallizes may be made by the chemist. Nothing approaching to the

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* Worcester Polytechnic, June 4, 1903; "Science," July, 1903.

† "Nineteenth Century," June, 1903.

‡ "Nature," November 3, 1904.

cell of a living creature has ever yet been made. The general result of an enormous amount of exceedingly intricate and thoroughgoing investigation by Huxley and Hooker and others of the present age, and by some of their predecessors in both the nineteenth and eighteenth centuries, is that no artificial process whatever can make living matter out of dead. This is vastly beyond the subject of the chemical laboratory, vastly beyond my own subject of physics or of electricity—beyond it in depth of scientific and of human interest."

Professor Wilson, of Columbia University, in his work, "The Cell and Heredity," declares that the more the cell is studied, the farther removed it appears from the inorganic world. The cell is an object composed of matter and energy *plus* a *something* which cannot be tested by any test that can be applied to matter or energy; and, therefore, it is a something which is neither matter nor energy. This intangible something—this life-property or organizing power, without which the cell would be nothing but dead matter or a bundle of crystals, cannot be regarded as a product of the matter composing the cell, inasmuch as the matter composing the cells or germs is identical for organisms which are vastly different in their final structures. For example, the germ-cells of a polyp and a fish are substantially alike and may grow side by side in the same drop of water, the one becoming a simple polyp, while the other assumes the complex form of a fish. Thus it is evident that neither the mere substance of the cells, nor anything in their environment, can account for the life-property or organizing power which is manifested by their difference in development. Professor Brooks, of Johns Hopkins University, in speaking of this organizing power of the germ, says:*

"While we know nothing of its origin, there seem to be insuperable objections to the view that this influence is either matter or energy. If it is physical energy, or wave motion, or perigenesis of plastidules, it is hard to understand why it has not all been dissipated long ago, or how it can multiply itself."

Professor McKendrick observes that:†

"If the matter were considered fully, it becomes evident that the phenomena of life depend on changes occurring in the interaction of particles of matter far too small even to be seen by the strongest magnification yet obtained by microscopes."

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* "Foundations of Zoology," p. 281.

† "Nature," September 26, 1901.

Professor Clerk Maxwell, in the "Encyclopedia Britannica," presented three propositions respecting the nature of the germ-cell, namely, first, the germ cannot be structureless, otherwise it could not develop into a future being with its thousands of characteristics; second, if it is structural, it is too small to contain a sufficient number of molecules to account for all the characteristics that are transmitted; or, thirdly, that the germ-cell is not a purely material system. It is evident that the first two propositions entirely destroy each other, so that the third or last proposition, namely, that the germ is not a purely material system, is the only view which can be logically held. Indeed, it must be obvious to any one that the qualities which remove a germ so far from the inorganic world are due to something which is more than, and different from, the mere energies of the physical constituents of the cell.

Thus far it is seen that, by a consideration of both the inorganic and organic worlds, we are left with the logical conclusion that visible things are manifestations of things that are invisible, of realities that manifest themselves, of powers in control. The mere matter composing organic cells or germs, the chemist tells us, is entirely decomposable into elementary indivisible and indestructible particles which possess unalterable qualities. A dead cell may be a complex composition, but it has lost all that gave it importance as an organic body—namely, the powers to feed, to grow, to reproduce and to exhibit what is physiologically known as "irritability." These are qualities which, as Lord Kelvin has observed, cannot be manufactured; and, whatever is made to account for them, it is evidently a something which is significant of order and purpose and quite as specific in its nature as any chemical element, as is made evident by its definite order of behavior. If these life-properties were simply the product of the properties of matter, then, in one way or another, they would answer to the tests of matter, which they do not; while it is an axiom of science that things which do not react to the same tests are not of the same category or kinship. And, since nothing can produce nothing, a phenomenon of any kind must represent *something.*

And once a something is admitted to exist, it must be admitted to exist forever, unless it can be shown to be decomposable into various constituents. But, so far as we know, the organizing power of a germ is incapable of being decomposed into independent parts, and therefore, as an individuality it can neither destroy itself nor be destroyed. It is as much a specific entity at one time as another. No other conclusion is warranted by the dogma of science that we shall not believe without evidence.

If we turn from the structurally blank germ-cell to an inspection of its highest development as seen in adult man, we shall observe a much greater complexity of phenomena which cannot be accounted for by any physical tests. Indeed, from a scientific view-point, the whole question of personal immortality may be decided upon the demonstrable relationship of the brain to the phenomena collectively known as "mind," for it is generally believed that, in one way or another, the brain is either the seat of the mind or that mind is a product of the brain. To render a decision, two questions must be answered, namely: (1) are brain and mind separable? and (2) if they are separable, is mind an indivisible unit? The first question will be affirmed if it can be shown that brain and mental phenomena are not parallel to each other in all their conditions—that is to say, if they are not invariably associated in the same relations or proportions as would necessarily be the case if mind were a mere product of the brain and entirely dependent upon it. This much accomplished, it will then only remain to be shown that mind is an indivisible unit, to meet the requirements of scientific exaction and receive the verdict which science renders regarding all individualities, namely, endless existence.

Those who hold the opinion that mind does not exist as an entity, but is simply a manifestation of brain-cell activity, base their assumption upon the observation that mental phenomena are influenced by physical conditions, including disease and drugs. Such observations, however, only show that the sensory or motor organs and their associating lines are crippled or perverted in their serviceability as agents of the mind, and consequently the mind is, in some degree or other, thrown out of its normal experience and mode of exercise. Restore the brain functions, and the mind is restored to its usual freedom and modes of activity. The condition is merely a problem of deranged environment.

Of late years, the "localization theory" of the brain—the theory of special functions for special parts—which is supported by experiments upon monkeys, dogs, etc., and also by the frequent observations that diseases of special parts of the brain in man often show a functional correspondence with the experiments on animals,—has influenced some persons in favor of the non-entity of mind.

But, in so far as the brain is a mechanical centre of association for the nerves coming and going from all parts of the body, so far we would naturally expect to find that special parts of its mechanism would represent special organs and functions of the body. But observations have extended farther than this; for it has been found that certain parts of the brain, when diseased, have frequently, but not invariably, been represented by some form of mental defect, such as mind-blindness, mind-deafness, or some break among the threads of memory, according to the part of the brain affected. While such observations cannot reasonably be disputed, their explanation on a materialistic basis is absolutely untenable, inasmuch as all parts of the brain thus involved have often been found diseased or absent without ever having manifested any of the symptoms which the parallelism of the materialistic theory would necessitate, or even any symptoms whatever. As Sir Charles Beevor, in his summing up of the evidences of tumors of the brain, says:*

> "Tumors may occur without giving rise to the symptoms which would be expected, and tumors may give rise to symptoms which are associated with other parts of the brain, and tumors may occur without giving any symptoms at all, although situated in parts of the brain whose functions are considered to be known."

Such observations effectually destroy any theory of mind localization in the brain which makes particular mental phenomena a mere product of particular parts of the brain. But we will consider the brain in its front, back and middle divisions.

Professor Schaefer, of Edinburgh University, whose name is chiefly associated with researches upon the functions of the brain, states† that Welt has collected fifty-nine cases of lesions confined to the frontal region of the brain in man, forty-seven of which (about eighty per cent.) showed no changes in either intellectual capacity or in character, and only twelve of the total number had such changes recorded. Schaefer farther remarks that in several monkeys he has completely removed both frontal lobes "without producing the slightest sign of the mental and intellectual dulness and alteration of character which has been regarded as pathognomonic of a lesion of this region" (p. 772, Vol. 2). The case recorded by Dr. Francis,* and one by myself,† had each extensive destruction of both frontal lobes, and yet neither of the subjects exhibited any mental aberration or anything else that could not be accounted for by mere loss of nervous energy. Many other cases could be cited, bearing upon the functions of the frontal lobes of the brain, with the same result in their showing.

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* "Brain," autumn, 1898.

† Schaefer's "Physiology," Vol. 2, p. 773.

The middle third of the brain is the area recognized as containing the executive centres for motion and general sensation. Yet, even these centres are not indispensable for the performance of the functions with which they seem to be usually associated. And it is hardly remarkable that this middle area of the brain (parietal lobes), rather than the frontal lobes (as Schaefer remarks), has been especially found to be developed in some men of genius—namely, Bach, Beethoven, Döllinger, Gauss, Liebig and Kant. But, as showing that even the middle third of the brain is not indispensable for mental integrity, I will cite three or four cases in point. Professor Putnam, of Harvard University, records the case of a man, thirty years of age,‡ whose entire left side of the brain (excepting the posterior lobe and lower portions of the frontal and temporal lobes) was destroyed by a diseased growth "which everywhere compressed the adjoining brain tissues, and to a great extent destroyed them"; and yet, in this man, "no notable mental changes were observable . . . His mind was clear and he read and understood with pleasure, and enjoyed the society of his family and friends; and although he dragged his right leg, he walked well, going to church and back, half a mile off, and he drove his horse to town, eight miles away, four days before his death."

Dr. Pierce Bailey, of Columbia University, records the case§ of a man, aged fifty-seven years, the entire right side of whose brain was destroyed of its gray-matter cells, while a large cyst containing a straw-colored fluid occupied the frontal lobes of the same side. Yet, says Dr. Bailey:

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* "American Journal of Medical Science," June, 1895.

† "Philadelphia Medical Journal," June 21, 1899.

‡ "Boston Medical and Surgical Journal," February 9, 1899.

§ "American Journal of Medical Science," March, 1899.

> "Up to the last his speech was perfectly normal, reading was not interfered with, and memory was unaffected. He was courteous and intelligent and patient; he was cheerful and attentive, and his power of attention was very good. He read the papers constantly, liked to talk politics, and was interested in the affairs of the hospital. He was singularly free from periods of depression, of emotional excitement, of irritability, of apathy, or of any other mental manifestation so common in gross brain diseases. He was cleanly, and in the three years of daily observation upon him there was nothing whatever at any time to indicate that his character or mental capacity was in the slightest affected."

Dr. W. B. Haddon, of St. Thomas's Hospital, London, records the case* of a man, twenty-one years of age, with an enormous tumor occupying the left side of the brain and severely compressing adjacent structures. Yet, says Dr. Haddon:

> "Although he occasionally had an epileptic fit and stammered slightly from childhood, he had no paralysis. He was somewhat opinionated, but evinced no moral perversion. At the time of his death (he died in a fit) he was clerk in the steward's office of St. Thomas's Hospital, and a few days later he would have entered the government examination for a second-grade certificate in perspective and drawing, branches in which he was pronounced by experts to be exceptionally proficient."

Professor Andral, of the University of Paris, records the case† of a man, twenty-eight years of age, who had the whole of the right half of his brain so completely atrophied that its covering membrane (*pia mater*) formed a cyst in which there was not a trace of brain tissue. The floor of the cyst was formed by the optic thalamus, the corpus striatum, and the parts on a level with these two bodies. Yet, says Andral, this man "had received a good education, had a good memory, and exhibited as much intelligence as most men."

In regard to the posterior third of the brain, which includes what is regarded as a centre for vision, a like array of testimony can be produced—namely, the existence of more or less extensive tumors without vision or mind being deranged. Professor Henchen collected eleven cases‡ in which there existed more or less extensive disease of the posterior lobes without vision being affected. Dr. Ferrier, in his work, "The Functions of the Brain," says:

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* "Brain," January, 1889.
† "Reference Handbook of the Medical Sciences," Vol. 4, p. 97.
‡ "Brain," Vol. 15, p. 177.

> "Though the occipital lobes (posterior) are included in the visual centres, it is, nevertheless, a remarkable fact that they can be injured or cut off bodily, almost up to the parieto-occipital fissure, on one or both sides simultaneously, without the slightest appreciable impairment of vision. This fact, which I have already observed in my former experiments, has been completely confirmed by Professor Yeo and myself and also by Professors Horsley and Schaefer."

In respect to the influence of form of brain upon mental phenomena, it can be pointed out that even the thick band of fibres, known as the *corpus callosum,* and which joins the two halves of the brain, connecting all parts of one half with all parts of the other, is not an essential organ for the free and normal action of the mind. Dr. W. W. Ireland has recently stated that there are at least six such illustrations on record. Three cases are noted in my own little work, "Brain and Mind." Nor are the convolutions or folds upon the surface of the brain significant of any mental quality so far as known. I need only refer to the charts of the brains of Gauss and Chauncey Wright, the two eminent mathematicians. The brain of Gauss, as recorded by Rudolph Wagner, was very markedly excessive in folds compared with the average brain; while the brain of Wright is described by Professor Dwight, of Harvard, as being simpler in its folds than the brain of a Venus Hottentot (a form of African idiot). The same disparity exists among the lower animals, for we observe that the resourceful beaver and the marmoset ape have no surface folds to their brains, while such folds are found to exist in the brains of animals so low down the scale of mammals as the echidna and macropus.

So much for the essential relationship of brain to mind. It must be sufficiently evident to any one that the facts here presented, which are only a few of many recorded, conclusively demonstrate that there is no invariable parallelism between brain condition or form and mental phenomena, such as should and would exist if the mind were a mere product of the brain. And, in thus demonstrating the separability of mind from brain, we have also demonstrated the unity or individuality of mind; for we are all aware that our present mental activity is inseparable from our past experiences, however dead our feelings may be to remote events. Memory is thus seen to be not only the basis of mental growth, but the sign of an indissoluble power making for a purpose that knows no end.

Yet, in spite of all evidences to the contrary, we still hear of "memory cells," as if bodies of matter, which are constantly changing their own constituents, could retain an infinite number and variety of successive impressions without the one impression destroying the other. It is surely evident to all that no impression can become an image or idea until it has been interpreted, which is an operation that cannot be conceived as being a function of matter. And because all impressions have to be recognized or interpreted to be known, that is to say, perceived and related, it becomes quite intelligible how the same idea can be secured through very different organic channels, a fact which is well illustrated by the case of Miss Helen Keller, who has attained to a college education through the sense of touch alone.

It may farther be observed that impressions of the most common experiences are usually interpreted automatically, that is to say, more rapidly than a conscious process. But, whenever an organ of sense becomes disordered, then it is that an ordinary impression, or no impression at all from the outside, may give rise to some form of illusion or hallucination, as the case may be, through the production of a misleading suggestive influence upon the mind. It is the disease, or functional disorder, of the brain or its connections which has perverted the impression or produced a perversion. It is only to be expected that the various organized channels of the brain shall normally bear some correspondence of a "press the button" order in relation to the activities of the mind. But it appears that it is only a conditional or cultivated correspondence. It is merely the relationship of master to servant, the mind proving itself the rightful master by its demonstrated ability to substitute one servant for another and still retain its own integrity. Death is but an eclipse, while genius as differing from insanity and imbecility is merely a question of degree of energy and its efficient control.

J. SANDERSON CHRISTISON.